

Langley Research Center
Safety & Mission Assurance Office

Safety Managers Meeting

Cocoa Beach, FL

Feb. 27-Mar. 1, 2007

José Caraballo
Safety & Facility Assurance
Langley Research Center

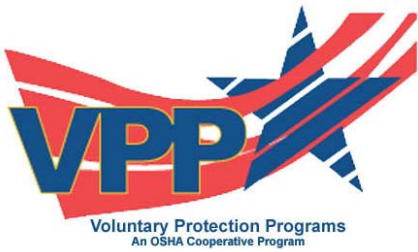


Agenda



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- The Good
- The Bad
- The Ugly
 - Low Breakers Switches
- Coming Soon
- Summary

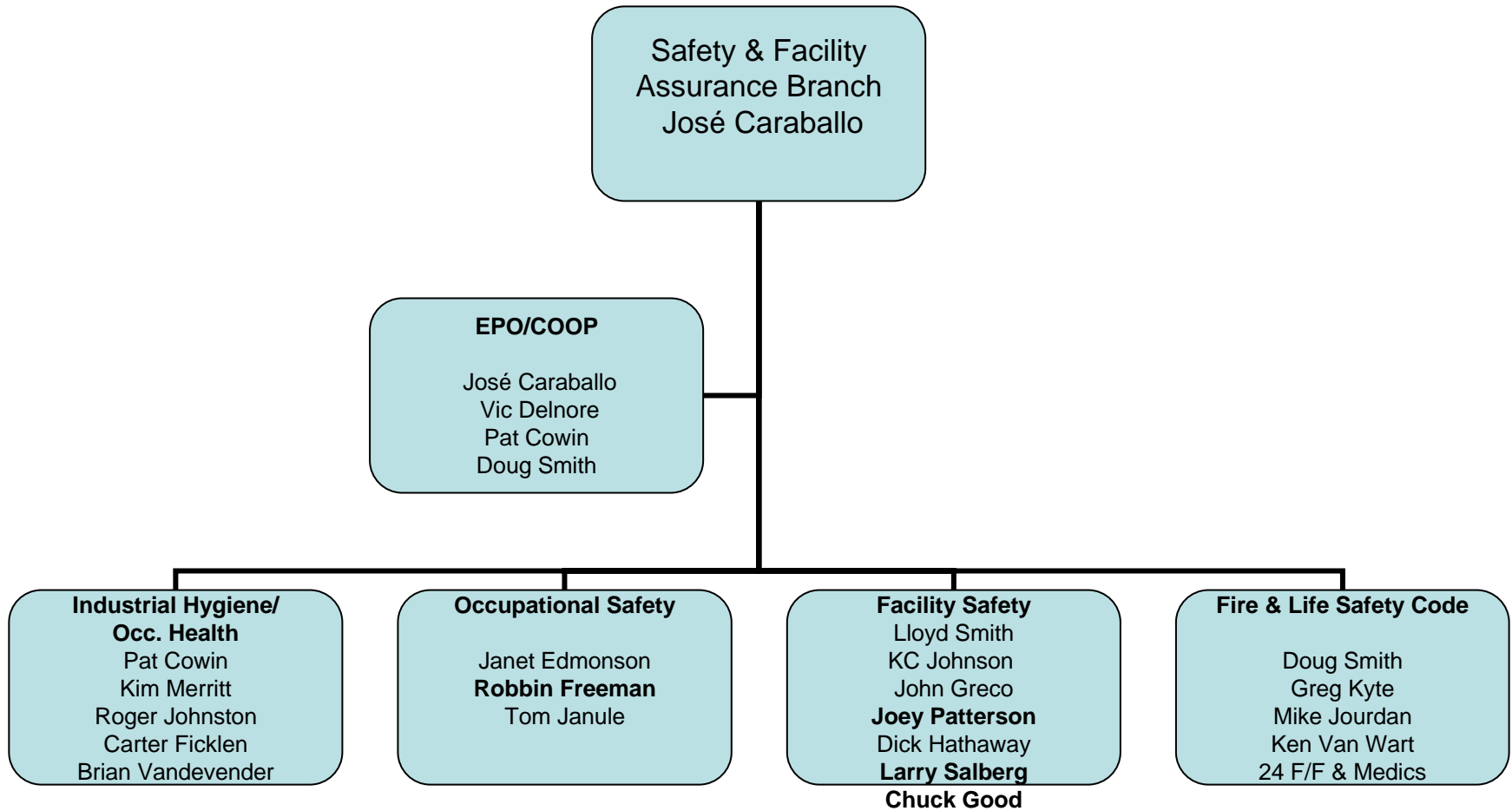


The Good

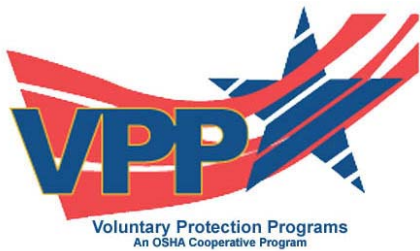


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- 1st Safety Awareness Week
 - Major Success/Complements from all levels
- A New Ambulance & A New Brush Fire Truck
- Developed and coordinated approval of the Continuity of Operations Plan (COOP)
- Hire 2 Engineers & 1 Specialist.
- Noticeable improvement in the working relationship with ROME Safety







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Beach, FL

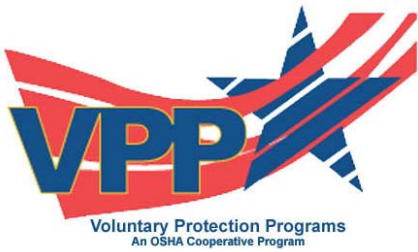


LaRC The Bad



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- Safety Professionals Pool
 - The pipeline for safety professionals is empty.
 - Recent article in Aviation Week, Feb. 5, 2007, entitled “The Vanishing Aerospace Engineer”
 - “I’m recruiting from Lockheed Martin and Raytheon and General Dynamics and they’re recruiting from us, because the source from outside is not that big” (Chairman/CEO of Alliant Techsystems)
 - No new blood in the system
- Three Hqs Safety Audits within months –
 - 40-50 auditors to ~ 20 CS & 12 contractors



LaRC The Bad

(continuation)



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- Perception of 2 Safety Offices (SFAB, Center Ops, ROME)
 - SFAB is the only Safety Office for Policy Interpretation
 - JHA/JSA vs SPA
 - LOTO
- Others



LaRC The Ugly



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- 2 Technicians injured from a scaffold mishap Feb 2006
- IFO Audit March 2006
 - Findings – Major
 - LDE Program
 - Lockout/Tagout
 - Findings – Others
 - Electrical
 - Pressure Systems
- Found Low Breakers Switches being use @ LaRC.



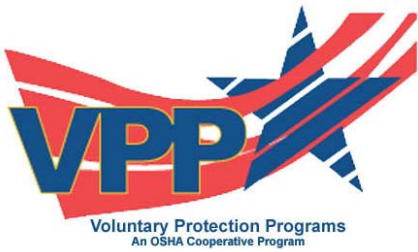
Oil-Filled Load Break Switch (LBS) Hazard



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OVERVIEW

- **Introduction**
- **Ames Road 1247F Hazard**
- **LBS History**
 - **CCAFS ROCC LBS Failure**
- **Summary**



Introduction



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- Two Oil-Filled Load Break Switches (LBSs) Identified In-Service at Ames Road Substation (1247F)
 - Used as Temporary Switches for CoF Project to Replace Old Switchgear
 - Energized at Lower Voltage (2400V)
 - Switches Not Being Operated – Used as Connection Point Only
- LBSs Previously Identified as Hazardous & Replaced at other NASA Centers, Military Facilities, & Utilities
- Hazardous Condition Must Be Addressed Immediately –
 - Personnel - RAC 1
 - Facilities/Equipment – RAC 1
- This Brief is to Address Situation, Hazards, Remedies & Impacts

Ames Road (1247F) Substation Hazard



Ames Road (1247F) Substation Hazard



Ames Road (1247F) Substation Hazard



March 1, 2007

Safety Managers Meeting
Cocoa Beach, FL

LBS History

INTRODUCTION

- What is an Oil Load Break Switch?
 - Oil Filled Medium-Voltage Device
 - Contains appx. 200 gallons of oil
 - Used to switch or connect power feeders
 - 1 to 6 “ways” (positions)
 - History of Catastrophic Failures –
 - NASA, Air Force, Electric Utility Experience:
 - Fire & Explosions
 - Injuries & Multiple Fatalities

INTRODUCTION (cont'd)

- What is the Replacement Technology?
- New Load Break Switch
 - SF6 Gas-Filled Device
 - Contains no oil
 - Used to switch or connect power feeders
 - 1 to 6 “ways” (positions)
 - Prior Design Flaws Corrected
 - No Fire Risk

LBS History

Old vs. New Style/Technology





LBS History



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Prior Directives/Advisories -

- NASA/Air Force Previously Advised by Manufacturers to De-energize and Remove
 - Ames Mishap Letter – 1988 - Explosion
 - Air Force Letters – 1985 & 1982 – Injuries/Fatalities
 - Appx. 230 LBSs Removed or Replaced (KSC) since 1992
 - 3 Failures at KSC - 1983, 98, 99
 - 1 Failure at CCAFS - 2001



CCAFS ROCC LBS Failure – 3/7/01

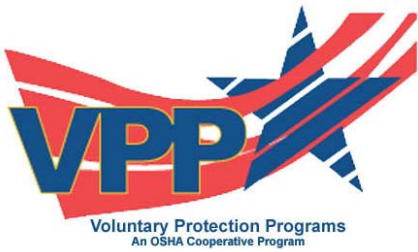


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- Catastrophic Failure of LBS Feeding KSC/CCAFS Range Operations Control Center (ROCC)
- Explosion and Fire - Appx. 45 minutes to contain
- Oil Fire Spread – Appx. 80 foot diameter
- Failure occurred 14 hours prior to launch

CCAFS ROCC LBS Failure – 3/7/01



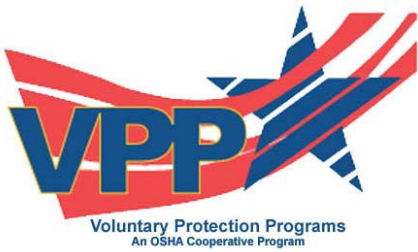


LBS Summary



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- Oil filled LBS still out there and they may get you if not careful.
- 2 LBS removed from service on 2/9/07.
 - We found 3 more LBS after this incident.
- Not easy to access data from past safety alerts or notification from other centers. We developed an Electronic Library that will allow us to search our documentation. However, we can only check what we received at the Center.

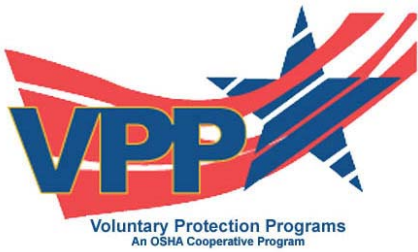


LaRC Coming Soon



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- VPP Re-Certification (Fall 2007)
- Safety & Health Awareness week – June 2007
- Implementing Supervisor's Mandatory Training
- Revision of our Lockout/Tagout Policy



LaRC Summary



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- Safety shall learn from our Health Partners and use the VITs system to schedule a Monthly or by-Monthly Discussion or training section for different topics.
- At LaRC We are moving ahead – slowly but safely.

Thanks for your attention
Have a Safe Return Home